

REMARKS

The Examiner is thanked for the thorough examination of this application. The Office Action mailed on September 22, 2005, however, tentatively rejected all pending claims 1-11. In this response,

The Action rejected claims 1-8 and 11 under 35 U.S.C. 102(c) as allegedly anticipated by *Fan et al.* (US 6,781,242). Claim 1 is the only independent claim, and Applicants respectfully traverse the rejection of claim 1 for at least the following reasons.

With regard to independent claim 1, claim 1 recites:

1. A method for manufacturing a package, comprising steps of:
providing a substrate having an opening and a bottom surface formed with a plurality of bond pads;
disposing a metal slice on the bottom surface of the substrate to cover the opening and the bond pads on the bottom surface of the substrate;
disposing a die on the metal slice inside the opening or above a top surface of the substrate outside the opening;
forming a plurality of bond wires between the top surface of the die and the top surface of the substrate to electrically connect the die to the substrate;
forming an encapsulating mold compound to cover the die, the bond wires, and a part of the top surface of the substrate; and
removing a part of the metal slice to form a metal heat slug thermally connected to the die and to expose the bond pads.

(*Emphasis added.*).

The Office Action alleged that *Fan* discloses all of the limitations of the claims. However, *Fan et al.* fail to disclose the step of disposing a metal slice on the bottom surface of the substrate **to cover the opening and the bond pads** on the bottom surface of the substrate, and the step of **removing a part of the metal slice** to form a metal heat slug thermally connected to the die and to expose the bond pads. The Office Action has referenced certain structural components of *Fan*, but hasn't actually noted where the claimed method steps are disclosed. For

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example, with regard to the elements that are emphasized above, the Office Action references a metal slice 26 of Fan.

In fact, *Fan et al.* teaches that the periphery of an upper surface of the heat slug 26 is attached to the lower surface of the substrate 22 around the cavity (column 3, lines 31-36). The heat slug 26 is illustrated as a metal plate that just spans the cavity in the substrate 22 and not covers the conductive traces 24 (as shown in FIG. 3B), as the beginning of the step of attaching the heat slug to the substrate. Thus, the heat slug 26 is not removed to expose the bond pads in the proceeding step, as expressly claimed in claim 1. Contrary to the Office Action's position, Fan entirely lacks any teaching or suggestion regarding the claimed features of "metal slice to cover the bond pads" and "removing a part of the metal slice" recited in the independent claim of the present application.

It is thus submitted that claim 1, and the claims dependent therefrom, patently define over the cited reference. For at least this reason, the rejection of claim 1 should be withdrawn.

Claims 9-10 were rejected under 35 U.S.C. 103(a) as being obvious over *Fan et al.* in view of *Shin et al.* (US 6,762,078). The rejections are respectfully traversed. In this regard, the Office Action has failed to identify a proper suggestion or motivation to combine the selective teachings of *Fan* and *Shin*. It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. *W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc.*, 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

"The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(Emphasis added) *In re Dow Chemical Company*, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicants note that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also requires the prior art to suggest both the combination of elements and the structure resulting from the combination. *Stiftung v. Renishaw PLC*, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to realize a method for manufacturing a package, as claimed by the Applicants.

When an obviousness determination is based on multiple prior art references, there must be a showing of some "teaching, suggestion, or reason" to combine the references. *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the "absence of such a suggestion to combine is dispositive in an obviousness determination").

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in

whatever form, must nevertheless be "clear and particular." Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

If there was no motivation or suggestion to combine selective teachings from multiple prior art references, one of ordinary skill in the art would not have viewed the present invention as obvious. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); Gambro Lundia AB, 110 F.3d at 1579, 42 USPQ2d at 1383 ("The absence of such a suggestion to combine is dispositive in an obviousness determination.").

Significantly, where there is no apparent disadvantage present in a particular prior art reference, then generally there can be no motivation to combine the teaching of another reference with the particular prior art reference. Winner Int'l Royalty Corp. v. Wang, No 98-1553 (Fed. Cir. January 27, 2000). Well-established Federal Circuit case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999). Evidence of teaching or suggestion is "essential" to avoid hindsight. In re Fine, 837 F.2d 1071, 1075 (Fed.Cir.1988). A description of the particular "teaching or suggestion or motivation [to combine]" is an "essential evidentiary component of an obviousness holding." C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352 (Fed.Cir.1998). Indeed, in forming an obviousness type rejection, "the [Examiner] must identify specifically ... the reasons one of ordinary skill in the art would have been motivated to select the references and combine them." In re Rouffet, 149 F.3d 1350, 1359 (Fed.Cir.1998). The Examiner can satisfy this burden of establishing obviousness in light of combination "only by showing some objective teaching [leading to the combination]." In re Fritch, 972 F.2d 1260, 1265 (Fed.Cir.1992).

In combining *Shin* with *Fan*, the Office Action merely concluded that it would have been obvious “since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice” (Office Action, p. 5, lines 5-8). This basis is clearly improper, as such a conclusory, result-oriented basis could be used to rejected virtually any patent claim on an improvement system that results in a device or method that is realizes some perceptible improvement over the prior art. Improvements of this sort are the very basis that underscores the purpose of the patent system (e.g., the improvement of technology), and the rejection embodies clear (and improper) hindsight reasoning.

Simply stated, the Office Action has failed to comply with the relevant legal standards in combining *Shin* with *Fan*. Consequently, the rejections of claims 9-10 are legally improper and should be withdrawn.

For at least the foregoing reasons, Applicants respectfully submit that all claims are in condition for allowance and such a notice, with allowed claims 1-11, earnestly is solicited.

If the Examiner believes that a conference would be of value in expediting the prosecution of this application, the Examiner is hereby invited to telephone the undersigned counsel to arrange for such a conference.

No fee is believed to be due in connection with this amendment and response. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

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